

# Unit Planning Guide: Grade 5 Unit 5 of 9

Unit Title: Multiplication and Division of Fractions	Pacing (Duration of Unit): 5 Weeks
Grade: 5	Buffer Day(s): 1 week

## Desired Results

### Transfer Goals (Priority practice standards in **bold**)

Students will be able to independently use their learning to:

- MP.1. **Make sense of problems and persevere in solving them.**
- MP.2. **Reason abstractly and quantitatively.**
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. **Model with mathematics.**
- MP.5. Use appropriate tools strategically.
- MP.6. **Attend to precision.**
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

### Established Goals (2011 MA Curriculum Frameworks Standards Incorporating the Common Core State Standards)

#### Prerequisite Standards:

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#### Standards (Priority Standards in bold):

- **5.NF.3: Interpret a fraction as division of the numerator by the denominator ( $a/b = a \div b$ ).** Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret  $\frac{3}{4}$  as the result of dividing 3 by 4, noting that  $\frac{3}{4}$  multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size  $\frac{3}{4}$ . If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*
- **5.NF.4: Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a**

#### WIDA for English Language Learners

Standard 1: ELLs **communicate** for **Social** and **Instructional** purposes within the school setting  
 Standard 3: ELLs **communicate** information, ideas and concepts necessary for academic success in the content area of **Mathematics**

In the lesson planning stage, teachers will need to differentiate lessons for ELLs. In order to accomplish this they will need: 1.) this curriculum map, 2.) a list of their ELLs and their proficiency levels, and 3.) appropriate language

<p><b>fraction.</b></p> <ul style="list-style-type: none"> <li>○ 5.NF.4a: Interpret the product <math>(a/b) \times q</math> as <math>a</math> parts of a partition of <math>q</math> into <math>b</math> equal parts; equivalently, as the result of a sequence of operations <math>a \times q \div b</math>. <i>For example, use a visual fraction model to show <math>(2/3) \times 4 = 8/3</math>, and create a story context for this equation. Do the same with <math>(2/3) \times (4/5) = 8/15</math>. (In general, <math>(a/b) \times (c/d) = ac/bd</math>.)</i></li> <li>○ 5.NF.4b: Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.</li> <li>● 5.NF.5: Interpret multiplication as scaling (resizing), by: <ul style="list-style-type: none"> <li>○ 5.NF.5a: Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.</li> <li>○ 5.NF.5b: Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence <math>a/b = (n \times a)/(n \times b)</math> to the effect of multiplying <math>a/b</math> by 1.</li> </ul> </li> <li>● <b>5.NF.6: Solve real-world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.</b></li> <li>● 5.NF.7: Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.28 <ul style="list-style-type: none"> <li>○ 5.NF.7a: Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. <i>For example, create a story context for <math>(1/3) \div 4</math>, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that <math>(1/3) \div 4 = 1/12</math> because <math>(1/12) \times 4 = 1/3</math>.</i></li> <li>○ 5.NF.7b: Interpret division of a whole number by a unit fraction, and compute such quotients. <i>For example, create a story context for <math>4 \div (1/5)</math>, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that <math>4 \div (1/5) = 20</math> because <math>20 \times (1/5) = 4</math>.</i></li> <li>○ <b>5.NF.7c: Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share <math>\frac{1}{2}</math> lb of chocolate equally? How many <math>1/3</math>-cup servings are in 2 cups of raisins?</b></li> </ul> </li> </ul>	<p>function expectations and scaffolds or supports.</p>
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Meaning (\*Mostly assessed through Performance Tasks/Assessments)

<p><b>Big Ideas:</b></p> <ul style="list-style-type: none"> <li>• A fraction represents a division problem</li> <li>• Multiplying a given number by a fraction less than 1 results in a product smaller than the given number</li> <li>• Multiplying a given number by a fraction greater than 1 results in a product greater than the given number</li> <li>• Use multiple strategies to solve real world problems involving fractions</li> <li>• Understand division of fractions as being similar to dividing whole numbers</li> </ul>	<p><b>Essential Questions:</b> (Questions which frame ongoing and important inquiries about the big ideas. They are written for students and used in daily instruction to help engage students in meaningful thinking.)</p> <ul style="list-style-type: none"> <li>• How can visual models help you determine the quotients and/or products of problems involving fractions?</li> </ul>
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Acquisition (*Mostly assessed through traditional summative assessments)	
<p><b>Knowledge:</b> Key basic concepts, facts, and key terms (written in phrases) students should be able to recall independently.</p> <p><b>Students will know...</b></p> <ul style="list-style-type: none"> <li>• A fraction represents a division problem</li> <li>• Multiplication of a given number by a fraction less than 1 results in a product smaller than the given number</li> <li>• Multiplication of a given number by a fraction greater than 1 results in a product greater than the given number</li> </ul> <p><b>Key Academic Vocabulary:</b></p> <ul style="list-style-type: none"> <li>• Dividend</li> <li>• Divisor</li> <li>• Quotient</li> </ul>	<p><b>Skills:</b> The discrete skills and process students should be able to use independently</p> <p><b>Students will be skilled at:</b></p> <ul style="list-style-type: none"> <li>• Computing products of fractions using an appropriate strategy. (Applying)</li> <li>• Using visual models to represent fraction division problems. (Applying)</li> <li>• Interpreting a fraction into a division problem. (Creating)</li> <li>• Demonstrating that multiplication of a number by a fraction less than 1 results in a product smaller than the given number. (Applying)</li> <li>• Demonstrating that multiplication of a number by a fraction greater than 1 results in a product greater than the given number. (Applying)</li> </ul>

**Resource Suggestions:**

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